



Geo-targeted Weather Alerts Coming to Millions of Mobile Devices

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Overview

- **Commercial wireless carriers and Federal Government respond to the need for mobile alerts on cell phones**
- **Common Alerting Protocol (CAP)**
 - *New way of formatting weather (NWS) and non-weather alerts*
 - *Feeds the new mobile alerts*
 - *Enables technology innovation in public alerting*
 - *Improve decision making and public response*

Commercial Carriers and Government Respond to the Need for Mobile Alerts



WARN Act of 2006 authorized DHS and FCC to begin activities toward development of a Commercial Mobile Alert Service (CMAS)



In 2007-08, joint Commercial and Government (all levels) committee developed recommendations for mobile alerts

- **Cell tower broadcast (not SMS text), so no network congestion**
- **90 character maximum**
- **Opt-out**



Rollout by all major wireless carriers

- **Called Wireless Emergency Alerts (WEA)**
- **New York City and Washington DC in late Dec 2011**
- **Rest of country starting April 2012 depending on carrier**

Wireless Emergency Alerts (WEA)



Alert Categories

- **Presidential**
- **Imminent threat to life and property (e.g., severe weather, HazMat, earthquake)**
- **AMBER Alert/child abduction**

Alert Message Content

- **What is happening (e.g., Tornado)**
- **Area affected (“in this area”)**
- **Time (e.g., til 4:15PM EST)**
- **Recommended action (e.g. take shelter)**
- **Sending agency (e.g., NWS)**

NWS Alerts Get to WEA Through FEMA Integrated Public Alert and Warning System (IPAWS)

National Weather Service
and other authorities



Alerts in Common Alerting
Protocol (CAP) Format

NWS

FEMA IPAWS

Commercial
sector



Television



Radio



Cell Phone
(WEA via
FEMA IPAWS)



Computer



Home Phone

Other alerting systems,
consumer electronics, and
decision support tools



Public Signage

CAP Message Format Encourages Technology Innovation that Improves Decision Making and Public Response

XML-based industry standard = low cost of entry for commercial developers

<event>Flash Flood Warning</event>

<urgency>Immediate</urgency>

<severity>Severe</severity>

<certainty>Likely</certainty>

<effective>2010-06-03T14:00:00-05:00</effective> 2010-06-03T17:00:00-05:00</expires>

<senderName>NWS Memphis (Western Tennessee, Arkansas and Northern Mississippi)</senderName>

<headline>Flash Flood Warning issued June 03 at 2:00PM CDT valid until June 03 at 5:00PM CDT by NWS Memphis</headline>

<description>DOPPLER RADAR ESTIMATES 1 TO 3 INCHES OF RAINFALL HAS OCCURRED OVER THE PAST HOUR

<instruction>MCUR IN AUTOMOBILES. NEVER DRIVE YOUR VEHICLE INTO AREAS WHERE THE ROADWAY...TURN AROUND...DONT DROWN</instruction>

<polygon>36.20,-88.91 36.18,-88.91 36.05,-88.84 35.99,-89.17 35.99,-89.19 35.98,-89.21 35.94,-89.30 36.17,-89.31 36.21,-89.04 36.20,-88.96 36.22,-88.95 36.20,-88.93</polygon>

Alert information
at its most
granular levels

GIS
Friendly

Communicating Impact and Improving Public Response Through CAP

<urgency>value</urgency>

- Immediate
- Expected
- Future
- Past

<severity>value</severity>

- Extreme
- Severe
- Moderate
- Minor

<certainty>value</certainty>

- Observed
- Likely
- Possible
- Unlikely

Typical Event

2-4" Snow
(Moderate Impact)

<urgency>Expected</urgency>

<severity>Moderate</severity>

<certainty>Likely</certainty>



Forecaster can better convey impact and generate greater public response for high impact events

Crippling 1/2" snow squall
(less snow, but greater impact)

<urgency>Immediate</urgency>

<severity>Severe</severity>

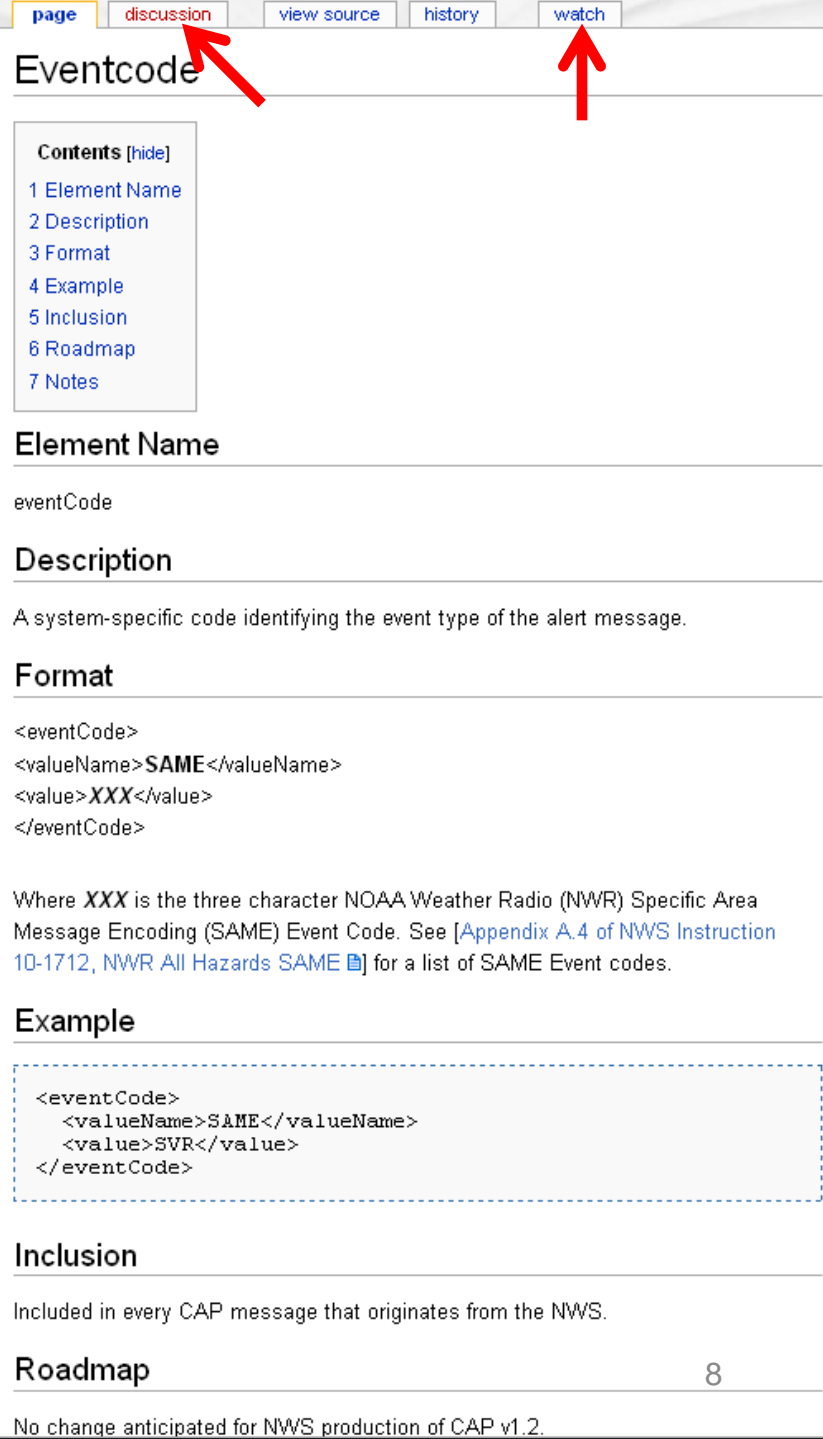
<certainty>Likely</certainty>



NWS Uses Wiki as New Way of Doing Business

https://wiki.citizen.apps.gov/nws_developers

- Usage guide for NWS produced CAP
- Facilitates collaborative discussion around CAP
- Keeps NWS CAP users up to date with email notification of changes



The screenshot shows the 'Eventcode' page on the NWS Wiki. At the top, there are navigation tabs: 'page', 'discussion', 'view source', 'history', and 'watch'. Red arrows point to the 'discussion' and 'watch' tabs. Below the tabs is a 'Contents [hide]' section with a list of links: '1 Element Name', '2 Description', '3 Format', '4 Example', '5 Inclusion', '6 Roadmap', and '7 Notes'. The main content area is divided into sections: 'Element Name' (with the text 'eventCode'), 'Description' (with the text 'A system-specific code identifying the event type of the alert message.'), 'Format' (with XML code snippets), 'Example' (with a code block in a dashed box), 'Inclusion' (with the text 'Included in every CAP message that originates from the NWS.'), and 'Roadmap'.

page discussion view source history watch

Eventcode

Contents [hide]

- 1 Element Name
- 2 Description
- 3 Format
- 4 Example
- 5 Inclusion
- 6 Roadmap
- 7 Notes

Element Name

eventCode

Description

A system-specific code identifying the event type of the alert message.

Format

```
<eventCode>
<valueName>SAME</valueName>
<value>XXX</value>
</eventCode>
```

Where **XXX** is the three character NOAA Weather Radio (NWR) Specific Area Message Encoding (SAME) Event Code. See [Appendix A.4 of NWS Instruction 10-1712, NWR All Hazards SAME

Takeaways

- NWS produced CAP messages will
 - *Enable new alerting and decision support technologies*
 - *Help save lives and protect property*
 - *Supply weather alerts for Wireless Emergency Alert service*
 - *Improve public response to NWS warnings*
- NWS CAP messages available from
 - alerts.weather.gov
 - *FEMA (see fema.gov/emergency/ipaws)*

Quick Facts about WEA

- **WEA service is free.**
- **Acronym soup – CMAS, Personal Localized Alert Network (PLAN), and WEA are all names for the same service.**
- **Major carriers are committed to producing WEA capable phones (Sprint - 12 phones, Verizon - 7 phones, ATT starting to produce).**
- **Not a privacy issue. Service does not track you. WEA is merely a radio broadcast from a nearby cell tower to the threat area.**
- **Service is not subscription based, so you only receive the alert if you are in the threat area.**
- **If you travel into an alert area after the alert was originally sent, you may still receive it. Sprint says the alert is resent every 5 minutes until the WEA has expired.**
- **Each WEA is only displayed once, so you don't receive duplicates.**
- **If you are in a voice or data session when the alert is released, you will not receive the alert until you are off and the alert is resent.**
- **WEA has a distinct vibration cadence and audio tone .**

Questions?

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